

- 1) Graph the function in an appropriate window. Find the zeros, state the domain and range.

$$f(x) = \sqrt[3]{|x^2 - 9|} - 3$$

- 2) Given the function $f(x) = 3x^2 - x$ find each:

$$f(-4), \quad f(x+a), \quad \frac{f(x+h) - f(x)}{h}$$

- 3) Find the equation of the line with slope $2/5$ and contains the point $(3, -2)$

4) Graph: $f(x) = \begin{cases} x^2 - 3 & x \geq 0 \\ -2x & x < 0 \end{cases}$

- 5) Given the demand and supply functions: *demand* $q = (x - 7)^2$ $0 \leq x \leq 7$ *supply*: $q = \frac{1}{9}x^2$
where x is the unit price, and q the quantity demanded and supplied in thousands. Find the equilibrium point and interpret each coordinate.

- 6) Find the domain of each function, write in interval notation:

a) $f(x) = \frac{x+2}{3-x}$

b) $g(x) = \sqrt{3x-2}$

- 7) Susie's Shoes is planning on producing a new ladies shoe. The fixed costs are \$135,000, while the variable costs are \$35 per pair of shoes. The revenue from the sale of each pair of shoes is expected to be \$70.

a) Find a cost function $C(x)$ for x pairs of shoes.

b) Find a Revenue function $R(x)$

c) Find a Profit function $P(x)$

d) How many shoes must be sold to break even?

- 8) Rewrite using rational exponents:

a) $\sqrt{x^7}$

b) $\sqrt[3]{c}$

c) $\frac{1}{\sqrt{x^6}}$

d) $\sqrt[4]{x^2}$

Simplify each:

e) $8^{\frac{1}{3}}$

f) $25^{\frac{3}{2}}$

g) $9^{-\frac{3}{2}}$

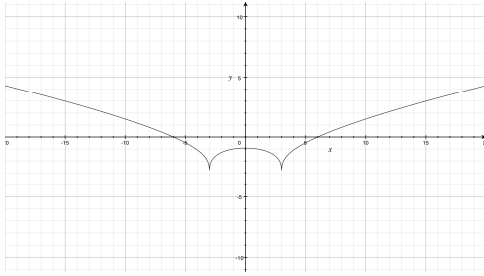
- 9) Solve each equation algebraically:

a) $3x^2 - 5x - 2 = 0$

b) $x^2 - 2x + 1 = 5$

- 10) Graph, state the vertex: $f(x) = -2x^2 - 8x + 5$

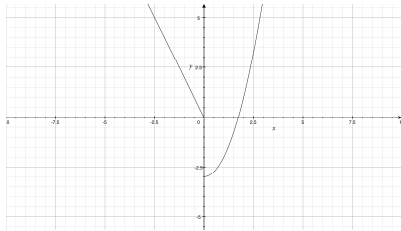
Answers:



1) Zeros 6, -6, Domain: $(-\infty, \infty)$ and Range $[-3, \infty)$

2) 52, $3x^2 + 6xa + 3a^2 - x - a$, $6x + 3h - 1$

3) $y = \frac{2}{5}x - \frac{16}{5}$



4)

5) Equilibrium point (5.25, 3.0625) when supply equals demand the equilibrium price is \$5.25, and the equilibrium quantity is 3062.5 units

6) a. $(-\infty, 3) \cup (3, \infty)$ b. $[\frac{2}{3}, \infty)$

7) $C(x) = 35x + 135,000$, $R(x) = 70x$, $P(x) = 35x - 135,000$ and to break even they must sell approximately 3857 pairs of shoes

8) a) $x^{7/2}$ b) $c^{1/8}$ c) x^{-3} d) $x^{1/2}$ e) 2 f) 125 g) $\frac{1}{27}$

9) a) $x = -1/3$, $x = 2$ b) $x = 1 + \sqrt{5}$, $x = 1 - \sqrt{5}$

10) Vertex (-2, 13) parabola faces down